

A Case Study in Master Planning the Learning Landscape: Hub Concepts for the University at Buffalo

By Shirley Dugdale, Roger Torino, and Elliot Felix

This case study describes concepts for three types of learning spaces that grew out of a Learning Landscape planning process. The process was part of a master plan study for the three campuses of the University at Buffalo, State University of New York. It involved research into user needs and aspirations about future pedagogy, development of learning space strategy, campus-scale planning principles, and concepts for exemplary spaces. The concepts described here address the needs of three sets of constituents: the Teaching Hub with experimental spaces, Learning Corridors to enrich the student realm, and the Faculty Hub as a destination for collaboration. These are some of the concepts and strategies which are currently being applied during the refinement of the draft master plan.

The following pages describe the hubs but also provide links to an appendix of further information about the process and research that lead to the development of the hubs.

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A Case Study in Master Planning the Learning Landscape

This case study grew out of an application of DEGW's **"Learning Landscape" approach** to campus planning. The Learning Landscape represents the entire environment that learners experience, from physical settings to the global information environment in which we are immersed. This approach applies a learner-centered approach to campus planning, conceiving of "networks" of places for learning and discourse, both physical and virtual, to connect campus communities.

In 2007 the University at Buffalo, State University of New York, embarked on a two-year process to develop a master plan that would enable them to achieve their **UB2020 strategic plan**, which projected the university to grow by 10,000 students, revitalize their three campuses, rationalize the distribution of functions, and foster key strategic strengths.

The master plan team, lead by Beyer Blinder Belle, Architects, retained **DEGW**, an international design consultancy, to lead the analysis and planning of the Learning Landscape—the full range of campus areas that accommodate teaching, informal learning, and community interaction.



Hub Concepts for the University at Buffalo

To support UB's Vision of Academic Excellence, DEGW developed a Learning Space Strategy for the master plan.

- The first four months of the study was a **research process** that consisted of visioning, data gathering, and analysis activities that engaged UB students, faculty, staff, and local community.
- Part of this effort was a **Learning Space Inquiry**, which involved workshops with faculty from different disciplines to understand potential directions for future pedagogy, along with collaboration with UB's Teaching & Learning Technologies Task Force on a faculty survey.
- Findings were synthesized into campus space **Planning Principles** that linked curricular strategy and space strategy and their implications for planning at the undergraduate and graduate levels.
- A wide range of **Learning Space Concepts** were then developed to meet various needs. Some of these concepts were for Hubs—clusters of functions whose co-location will encourage greater synergies between them. The three hub concepts dealt with in this article focused on different user populations: faculty, students, and researchers/scholars.

This case study will describe three hub concepts:

Teaching Hubs

Clusters of experimental classrooms with academic technology support



Learning Corridors

Strategies for enhancing paths near classroom activity



Faculty Hubs

Shared destinations for faculty to meet and collaborate



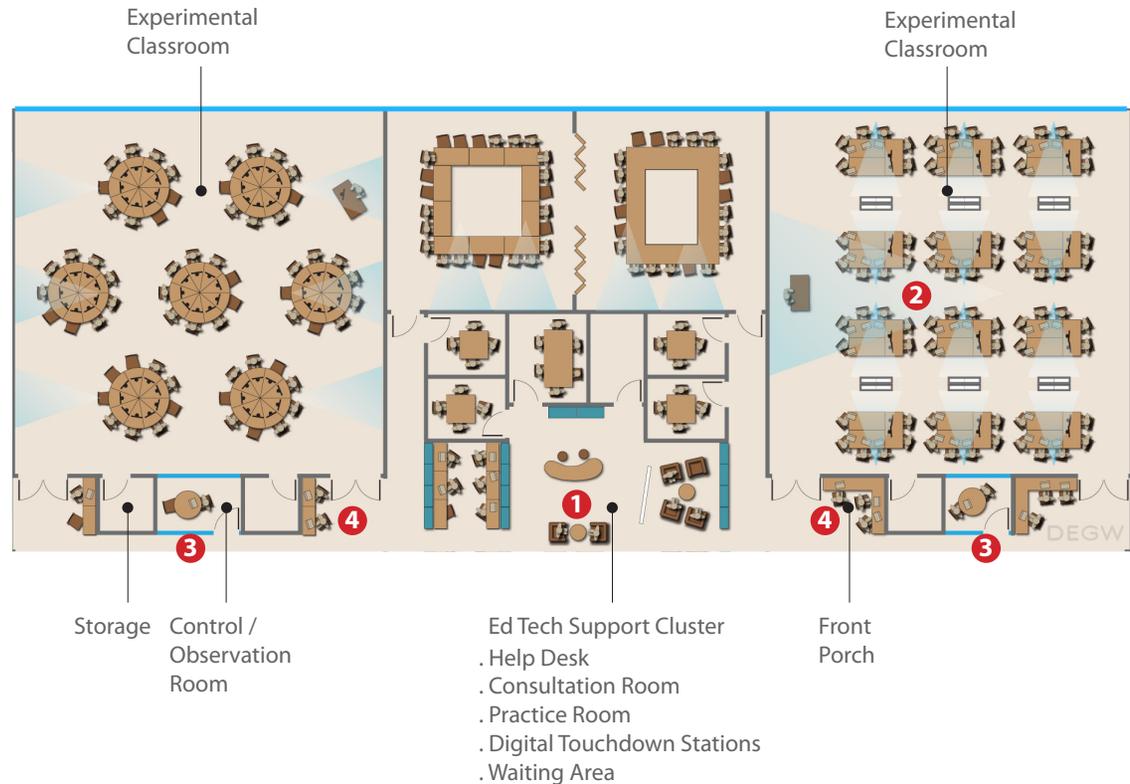
Teaching Hubs to Encourage Teaching Innovation

Teaching Hubs were conceived as clusters of experimental teaching spaces. Embedded into classroom zones, they can provide flexible learning studios that are bookable on demand to encourage experimentation by faculty for a week or two at a time. Accommodating a range of teaching modalities, they allow a better fit of desired activity with appropriate setting.

Program Synergies

- Teaching Hubs are part of a network of strategically distributed faculty support spaces, which can vary depending on vicinity and be scaled in size depending on budget.
- They are designed to meet the need for high-touch services, instructional support, and experimental teaching.
- Convenient and quick tech support incentivizes the integration of new technologies in teaching.
- They can be embedded in academic neighborhoods with specific discipline needs, or support multiple units from a central location.

Click [here](#) for further information on the process of Research and Analysis that led to development of this concept.



- 1 An educational technology support suite is centrally located to assist faculty, manage set-up of rooms, and capture data on the effectiveness of their use. Consultation space is included for curriculum design and team collaboration, plus digital media touchdown stations.
- 2 Movable team screens support team collaboration and co-creation with collaboration software. Flexible furnishings allow multiple layouts to accommodate more active learning.
- 3 Glass walls and integrated camera systems allow monitoring and learning about the use of the space.
- 4 Seating in the adjacent corridor promotes after-class discussions.

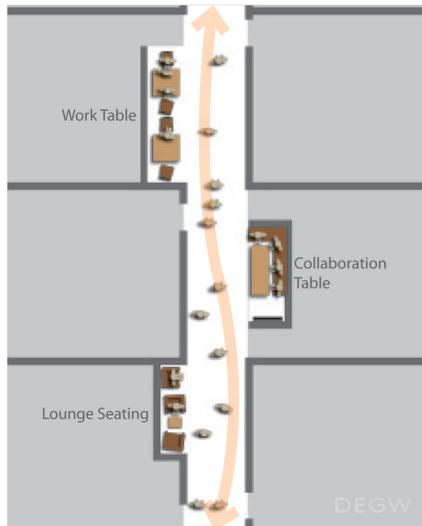
Learning Corridors to Encourage Informal Learning

Learning Corridors are a system of distributed seating areas and “front porches” along corridors to allow conversations to continue after class.

Click [here](#) for further information on the process of Research that led to development of this concept.

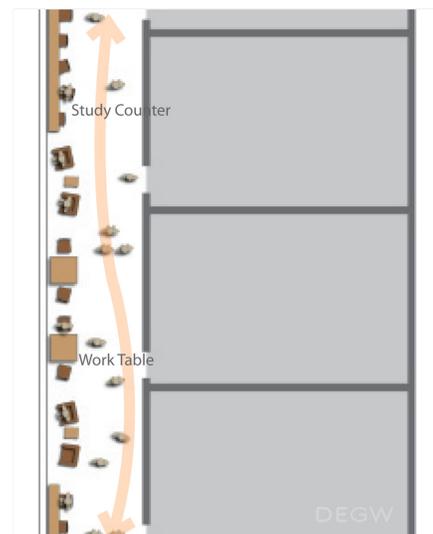
Study Nook

Small, informal spaces carved from formal learning spaces to encourage interactions, generate activity, and provide a comfortable waiting area to work



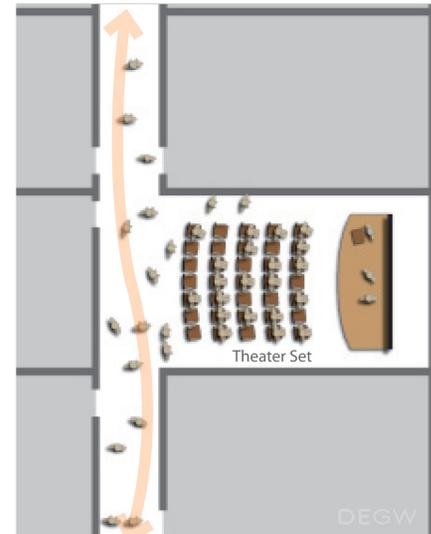
The Linear Café

Collaborative tables located to take advantage of light and views, animated with food service and access to power



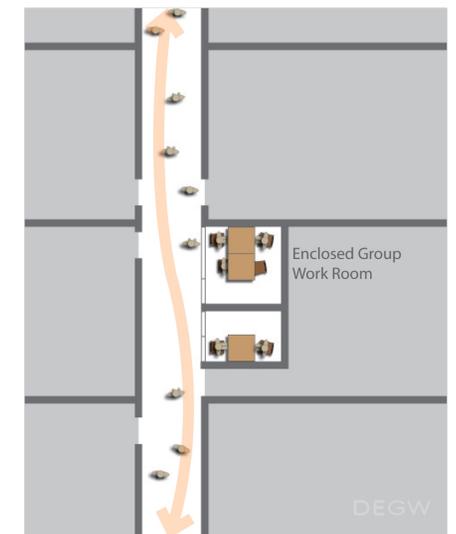
The Open Theater

A demo space for sharing informal presentations by students, faculty, or librarians, that allows passersby to join



Study Booths

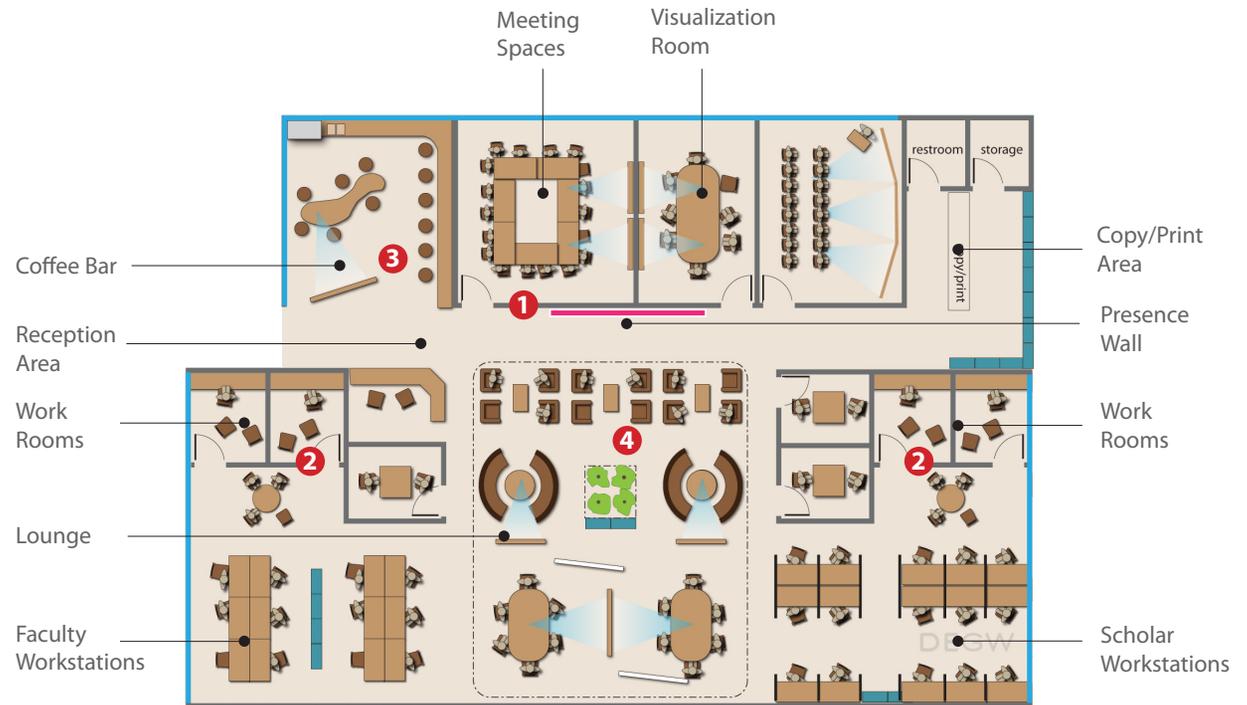
Small glass-enclosed study spaces for concentrated work between classes or for private calls



Faculty Hubs to Foster Interdisciplinary Collaboration

Faculty Hubs were conceived as collaborative centers for faculty and destinations to support interdisciplinary work. These hubs were intended to support the majority of faculty who may not have well equipped meeting facilities available to them. As the changing demands of academic research require more interdisciplinary collaboration, and work patterns become more distributed, hubs can enable collaboration and interaction across groups using bookable shared space.

Looking at alternative models and best practice examples from diverse sectors was part of the Learning Landscape approach. Click for more on some of the **models** studied by the team for the faculty hubs.



- 1 Shared meeting rooms equipped for high-end data visualization and video conferencing with global research teams
- 2 Bookable work spaces to work with colleagues when visiting between campuses or continue discussions after meetings finish. Flexible furnishings to allow changing uses.
- 3 Coffee area near entry for serendipitous interactions and informal presentations
- 4 Lounge with browsing displays to share research initiatives

Resources and Acknowledgments

Resources and links for further information:

UB2020 Strategic Plan process

<http://www.buffalo.edu/ub2020/overview/>

UB master plan website

<http://www.buffalo.edu/ub2020/plan/index.html>

Learning Landscape **Concept Phase Report**
from UB master plan

http://www.buffalo.edu/ub2020/plan/phase2_learn_cultivating.html

Shirley Dugdale, **“Space Strategies for the New Learning Landscape”** *EDUCAUSE Review*, vol. 44, no. 2 (March/April 2009)

2007 **ELI webinar** on “Planning the Informal Learning Landscape”

<http://net.educause.edu/ir/library/pdf/ELI-WEB073.pdf>

For further information about the concepts or process, contact sdugdale@degw.com
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Acknowledgments and credits

With thanks to all that participated in and supported this study, especially:

The University at Buffalo, State University of New York

Sean Sullivan, Associate Vice President for Academic Planning & Budget

Robert G. Shibley, AIA, AICP, Senior Advisor to the President, Campus Planning & Design

Elias G. Eldayrie, CIO & Associate Vice President for Information Technology

Richard Lesniak, PhD, Director, Academic Services, Computing & Information Technology

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- **Research:** Models for Hubs

About the University at Buffalo's Strategic Plan UB2020

UB has posted a wealth of material about their extensive planning process, which may be of interest to readers.

The University at Buffalo is a comprehensive research university with more than 28,000 students and 14,000 faculty and staff on three campuses. In 2004, UB embarked on an ambitious program of improvement and growth whose initiatives are known collectively as UB2020 and are aimed at securing UB's place among the best public research universities in the nation. In August 2007, work was begun on the first comprehensive physical plan for UB since the design of the North Campus nearly 40 years ago.

UB 2020 Strategic Plan

<http://www.buffalo.edu/ub2020/overview/>

and Framework for Planning

<http://www.buffalo.edu/ub2020/plan/vision.html>

UB's **Strategic Strengths** are a series of eight distinguished, cross-disciplinary areas of progress indigenous to the University at Buffalo. Each strength serves as an infrastructure for pulling together researchers from across the university to work cooperatively in pursuit of solutions to wide-ranging problems through a nontraditional approach. This faculty-driven, transdisciplinary initiative represents eight areas of scholarly strength in which UB has an ongoing tradition of excellence. The faculty hub concept was developed to provide destinations for meeting and gathering for these trans-disciplinary groups to connect and work together.

<http://www.buffalo.edu/ub2020/strengths/>

Public Forums at the end of each phase of the master planning process presented responses to the key planning issues and challenges, including projected growth, creation of a new downtown campus, opportunities to rationalize the distribution of functions across campuses and create new facilities to revitalize the University by 2020.

<http://www.buffalo.edu/ub2020/plan/index.html>

The project is now in the final draft stage and anticipated to be completed this year.

About the DEGW Learning Landscape Approach to Campus Planning

RESEARCH

has a role in the offering of a robust set of options that are provided to do so.

PALETTE OF FORMAL LEARNING SPACES

The Palette illustrates the relationship between formal learning spaces and their use. It is meant to increase the visibility of a well-balanced across a broad range of learning space types.

RANGE OF TECHNOLOGY SYSTEMS

The Learning Space Technology System Plan identifies the spaces as well as plan for new ones, including communication infrastructure, and the relationship between categories overtime. These locations and access, provides a way to ensure the technology needed to support their use.

DESIGN CRITERIA FOR FORMAL LEARNING SPACES

The design criteria outline a set of criteria to guide the design and plan for new ones to ensure the spaces meet the needs of the technologies, high environmental quality, and user experience.

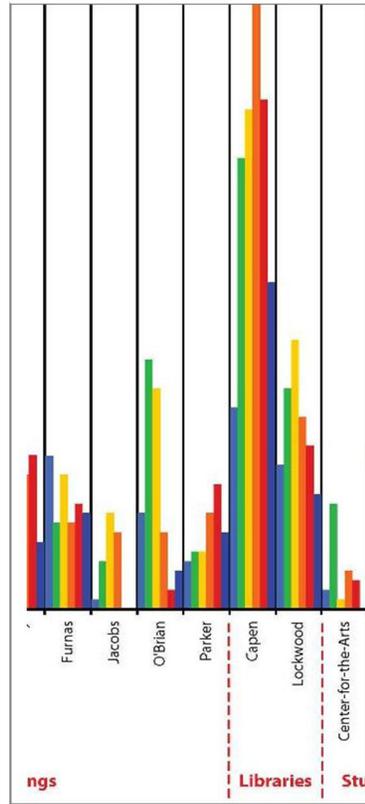
ANALYSIS FOR LEARNING SPACES

As part of developing the Learning Space Strategy, formal classrooms, based on data from the University at Buffalo Capital Facilities and Space Management, included conversion of tablet armadillo, and the creation of small-scale, centrally-managed, and informal learning spaces.

DISTRIBUTION OF FORMAL LEARNING SPACES

In order to best meet UB's current and future needs, a "Mixed Spaces" scenario, which

ANALYSIS



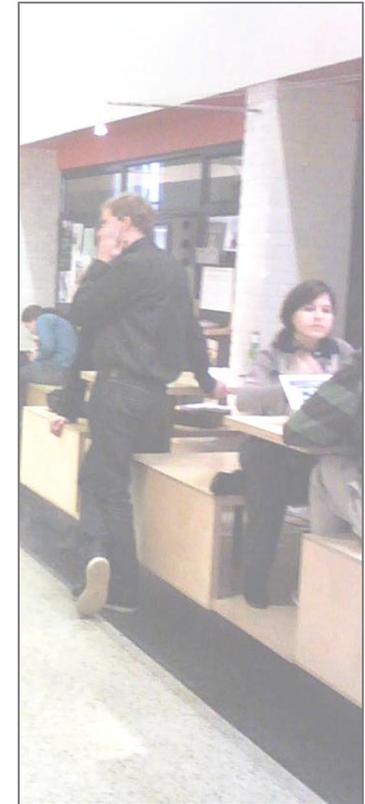
STRATEGY



CONCEPTS



MASTER PLAN



The process for master planning the Learning Landscape relies on gathering data, synthesizing findings to frame the issues, forming a clear vision for the future, and developing the strategies and concepts to achieve that vision. This is not a linear process, though, but iterative in nature.

Compared to more conventional campus planning, a Learning LandscapeSM approach

- considers the full range of spaces for learning,
- depends on engaging users with special tools,
- has a research-focus, and
- is driven by forecasting rather than standards.

Research: About Teaching Spaces

Teaching Space Performance Survey

Existing learning space, both formal and informal, was analyzed through observations, workshops with faculty and students, and a review of space utilization.

A key data source was a survey developed in collaboration with the Teaching & Learning Task Force that went to all faculty. It probed for opinions about adequacies of existing teaching spaces by disciplinary area.

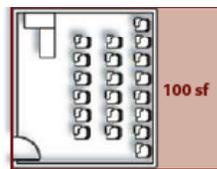
3.1 Top 7 Obstacles to Teaching at UB, by School (% of respondents)

	Unavailability of appropriate learning spaces	Environmental quality of learning spaces	Inappropriate furniture in learning spaces	Large class sizes	Design quality of learning spaces	Inappropriate technology in learning spaces	Lack of time for trying new teaching approaches
Architecture and Planning	75%	75%	100%	50%	50%	100%	25%
Arts & Sciences: Arts	100%	50%	50%	0%	50%	50%	50%
Arts & Sciences: Humanities	36%	55%	36%	36%	45%	0%	45%
Arts & Sciences: Natural Sciences & Math	40%	30%	20%	50%	20%	20%	20%
Arts & Sciences: Social and Behavioral Sciences	55%	55%	36%	55%	55%	27%	36%
Dental Medicine	33%	67%	33%	33%	33%	0%	33%
Education	54%	46%	62%	23%	38%	62%	15%
Engineering and Applied Sciences	25%	25%	25%	50%	25%	25%	25%
Law	100%	0%	100%	0%	100%	0%	0%
Management	17%	33%	17%	50%	17%	0%	17%
Medicine and Biomedical Sciences	40%	50%	40%	40%	40%	40%	40%
Nursing	100%	67%	67%	67%	33%	33%	50%
Pharmacy and Pharmaceutical Sciences	67%	33%	67%	67%	33%	0%	0%
Public Health and Health Professions	33%	0%	33%	33%	0%	33%	33%
Social Work	33%	83%	33%	17%	33%	67%	33%
All Schools	48%	48%	43%	41%	37%	32%	30%

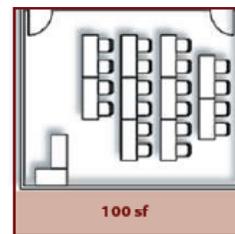
□ < 25% □ 25% - 50% □ > 50%

Planning for Flexibility

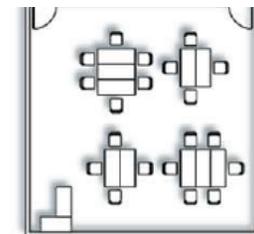
A large number of the classrooms still have tablet-arm chairs. Because active learning settings require more area per seat, migrating to these new types of settings was a challenge for the master planning, suggesting the need for better space distribution strategy campus-wide over time as the master plan evolves.



Area per person: 15-18 sf/pp
Area of room: 300-360 sf



Area per person: 20-30 sf/pp
Area of room: 400-600 sf



Area per person: 25-35 sf/pp
Area of room: 500-750 sf

Analysis: Testing a Palette of Formal Learning Spaces

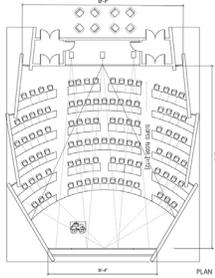
A palette of formal learning/teaching spaces was developed in workshops with faculty, based on anticipated future pedagogy and desirable learning activities.

Then a campus-wide survey polled all faculty on what proportion of time they would prefer to spend in different types of teaching settings in the future. These findings informed the space projections and reinforced the need for a strategy to give faculty more variety and choice in settings.

1.1 Ideal % of Class Time Spent in Learning Spaces, by School (average % of time)

School	Lecture Hall	Case Study Room	Learning Studio	Flexible Classroom	Seminar Room	Meeting Room	Technology Sandbox
Architecture and Planning	0%	0%	14%	25%	37%	24%	0%
Arts & Sciences: Arts	9%	4%	63%	0%	15%	0%	10%
Arts & Sciences: Humanities	15%	25%	0%	23%	37%	0%	0%
Arts & Sciences: Natural Sciences & Math	86%	7%	1%	0%	6%	0%	0%
Arts & Sciences: Social and Behavioral Sciences	29%	22%	4%	19%	21%	5%	0%
Dental Medicine	87%	10%	3%	0%	0%	0%	0%
Education	0%	12%	16%	45%	21%	3%	4%
Engineering and Applied Sciences	23%	28%	13%	23%	10%	0%	5%
Law	0%	25%	11%	0%	38%	26%	0%
Management	15%	33%	19%	8%	24%	3%	0%
Medicine and Biomedical Sciences	43%	16%	2%	13%	13%	1%	13%
Nursing	40%	25%	6%	4%	25%	0%	0%
Pharmacy and Pharmaceutical Sciences	47%	10%	10%	15%	13%	5%	0%
Public Health and Health Professions	20%	38%	0%	28%	0%	0%	15%
Social Work	8%	0%	2%	45%	45%	0%	0%
All Schools	27%	18%	8%	20%	21%	3%	3%

DIDACTIC

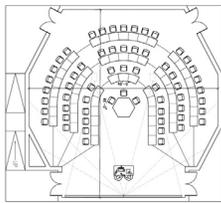


Lecture Hall



Capacity: 100 and up

HYBRID

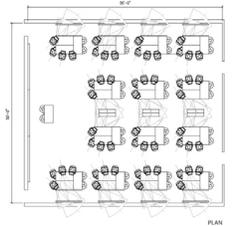


Case Study Room



Capacity: 40-100

COLLABORATIVE

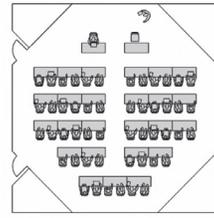


Learning Studio

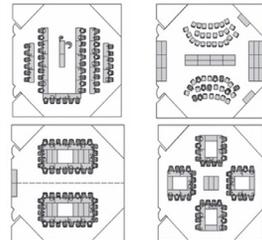


Capacity: 40-84

FLEXIBLE

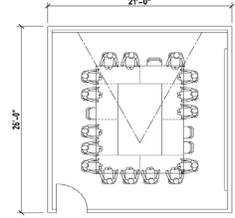


Flexible Classroom



Capacity: 24-60

CONVERSATIONAL

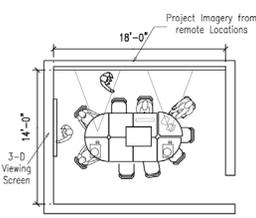


Seminar Room



Capacity: 16-24

CONNECTIVE

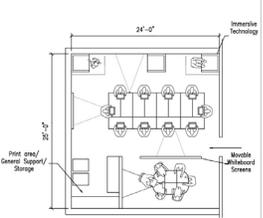


Meeting Room



Capacity: 8-12

EXPERIMENTAL



Technology Sandbox



Capacity: 15-25

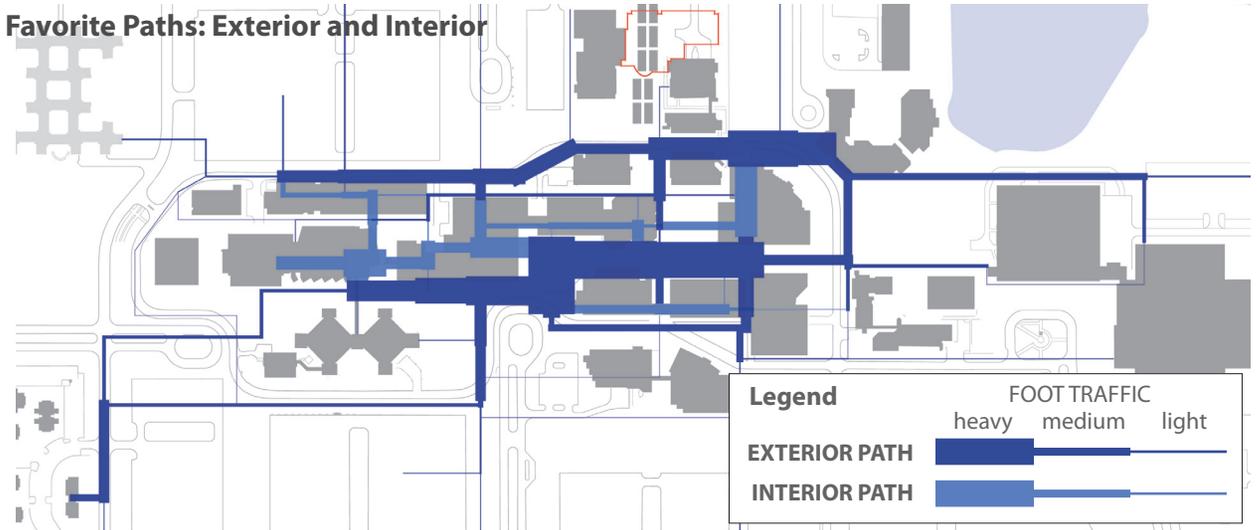
Research: Learning from Laptop Usage Data & Path Studies

Research covered the multitude of ways in which students interact with different spaces found across campus. An understanding of these interactions made it possible to identify opportunities for strategic, small-scale interventions that would complement the already existing spaces for learning, as well as increase the sense of vitality and buzz both inside and out.

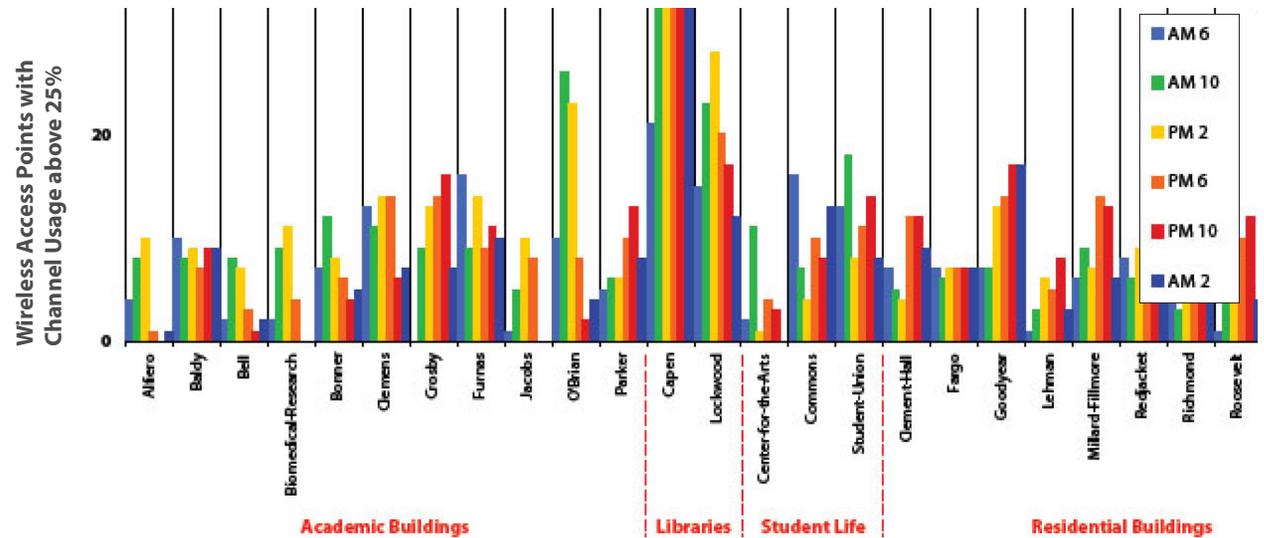
Workshops that engaged a cross-section of the student population generated an aggregated “mental map” of interior and exterior pedestrian paths. In addition, a series of studies on the usage of wireless zones on campus throughout the day further enriched the identification of popular places to study and gather. One interesting finding was that students frequently accessed the network from corridors, highlighting the need to provide better spaces to work as people move between activities.

Understanding the usage of space through several methods of analysis enabled the team to pinpoint major campus crossroads and “main streets” for implementation of Learning Corridor concepts.

Favorite Paths: Exterior and Interior



Time Period Popularity of Wireless Campus Zones



Research: User Needs

Another research objective was to obtain a refined understanding of student activities and the spaces in which they took place to get a snapshot of user needs and campus culture. A series of student workshops and surveys allowed a peek into a typical “Day in the Life” of a broad cross-section of the campus community and probed for student priorities on what should be at the heart of the campus.

Analysis revealed several generic activity and space use patterns, leading to the development of six student learning “workstyles,” of which it is important to emphasize that a single student may be characterized by more than one workstyle. The workstyles informed the planning of a range of learning spaces and provided criteria so that the Learning Landscape would respond to multiple learning styles.



Night Owl



Nomad



Domestic Scholar



Scholar Athlete



Solo Scholar



Social Scholar



Research: Models for Hubs



Places to encourage brainstorming and creative interaction were studied, such as **BOX** at the London School of Economics, a facility designed to bring together academic and corporate participants for facilitated play with Legos, and Google's rich and playful work environments.



Corporate workplace models, designed to accommodate mobile work styles, consist of a range of shared and individual spaces, touchdown workstations, and lounge areas. Airport lounges also incorporate bookable space, as well as food facilities.



Academic research models for advanced collaborative work with complex data were studied, such as meeting spaces that use **Access Grid** technology to support scientists to working in global teams.



Experiments in collaborative spaces give insights on how face-to-face collaboration will be enhanced in the future to complement virtual dialogue with remote colleagues. For example, Cisco is developing their **Telepresence** system to support distributed work groups.